

U.S. Department of
Homeland Security

United States
Coast Guard



Commandant
United States Coast Guard

2100 Second Street, S.W.
Washington, DC 20593-0001
Staff Symbol: G-PSO-5
Phone: (202) 372-1440
Fax: (202) 372 1926
Email: mark.a.prescott@uscg.mil

16113
August 31, 2006

Daniel J. Basta
Director, National Marine Sanctuary Program
U. S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
1305 East-West Highway
Silver Spring, MD 20810

Dear Mr. Basta:

This letter is in reply to your comments and recommendations to the draft Environmental Impact Statement/Environmental Impact Report for the Cabrillo Port Liquefied Natural Gas (LNG) Deepwater Port. In order to minimize the length of this response, we have condensed the comments and recommendations to the salient points.

Comments and recommendations on the DEIS/DEIR:

1. The FEIS/FEIR should include specific details of emergency procedures for avoiding harm to sanctuary resources that could result from vessels in distress.

The LNG carriers would not anchor, enter the current boundaries of the Channel Islands National Marine Sanctuary (CINMS), the Santa Barbara Traffic Separation Scheme (TSS), or be any closer to the mainland than the Cabrillo Port FSRU. The distance from the FSRU and the closest boundary of the CINMS is 12.65 nautical miles (nm) (14.56 miles).

The Applicant will be required to implement specific measures if a liquefied natural gas carrier (LNGC) became disabled. In such a situation, the LNGC will be secured by stand-by tugs, to prevent it from drifting or grounding. There will be 2 tugs stationed 24/7 within the 500 m safety zone around the FSRU. LNGC arriving at the FSRU would be in contact with the port from a considerable distance away, providing opportunities for tug assist should it be needed even several miles from the facility. If determined by the Captain of the Port (COTP), a disabled LNGC would be towed to a secure and safe location until it was either repaired and returned to service, or towed to another location. If the vessel can not be repaired at the site, and before a less-than-functional vessel could be moved, the Applicant would have to develop an operational and site-specific towing plan and obtain Coast Guard approval. The plan would be based on the site-specific situation at the time of towing. In addition, the COTP would have to undertake specific procedures to ensure that the vessel does not embark on a "manifestly unsafe" voyage. There is the possibility that the Commanding Officer of Sector LA/LB, acting under the statutory authorities (as COTP/Officer in Charge, Marine Inspection) as outlined in 33 CFR Part 1, could

direct the owner/operator of a stricken vessel to relocate the vessel to a designated anchorage area or other USCG-approved area. While highly unlikely, the COTP/Officer in Charge, Marine Inspection may issue either a COTP Order or Deviation to Enter Port, if, based on the circumstances, he/she believes that such an action would or could ensure the public safety and security, and minimize impacts to the environment. Based on such responses, available to be used by the COTP/Officer in Charge, Marine Inspection, and the readily available support vessels, we believe the possibility of significant impacts to the CINMS is highly unlikely.

2. The DEIS/DEIR should clarify where vessels transiting the TSS will exit during the construction phase of the project.

During construction, supporting vessels will take the most direct path from Port of Hueneme to the construction location. These routes are shown in the attached Figure 4.3.3. The Ports of Los Angeles and Long Beach will not be used during construction.

3. The DEIS/DEIR should include a discussion of mitigation to reduce the expected increase in noise from the shipping traffic.

The Applicant will be required to avoid off-shore construction during the Gray whale migration season. Noise produced by the LNGCs would likely be loudest at cruising speeds, and reduced in volume when moored and discharging LNG. The main noise associated with LNGC docking would be with tugs and the FSRU thrusters. The total level for the combination is 192 dB broadband. Similarly, crew and supply vessels would be loudest while underway, but such sounds would be transitory and short-lived. Supply vessels would generate a maximum of 181 dB, reducing to 174 dB at one meter from the source. No impulse sounds would be generated during construction or operational activities.

To minimize disruption of marine mammal behavior due to noise, the applicant will be required to work with marine architects, acoustic experts, mechanical experts, and the USCG to design the FSRU and its equipment to reduce, to the maximum extent practicable, the output of cumulative noise generated at the facility.

In addition, the Applicant will reduce, by more than half, the number of weekly and annual transits made by the crew boat/supply boat between Port Hueneme and the FSRU from the original estimates in the DEIS.

4. The DEIS/DEIR should identify specific measures regarding federal/state protected avifauna that depend on the CINMS for breeding, roosting and foraging (e.g., brown pelicans and Xantu's murrelets). The biological data concerning Xantu's murrelets should be updated. There is breeding occurring on Anacapa Island, as well as on Santa Barbara Island.

According to CINMS staff, installation of the FSRU and pipelines at the proposed location is not inconsistent with the Sanctuary (Mobley, August 2004). It is anticipated that the Cabrillo Port project will not affect federal/state avifauna that depend on the CINMS. In addition, critical

habitat has not been established for the brown pelican. Brown pelicans are common and will be seen throughout the region and within and near the project site.

The mean at sea density (birds per km²) of brown pelicans throughout the California current was estimated to be 0.3 km² in July and 0.3 km² in December.

The revised DEIR includes updated information on Xantus's murrelets.

5. With regard to ballast water, the DEIS indicates that ballast water can be exchanged beyond the Exclusive Economic Zone, the DEIS/DEIR should also consider alternative techniques that mechanically, physically, chemically or biologically kill or remove the unwanted invasive species.

Introduction of invasive species through ballasting operations at Cabrillo Port would not be likely during normal operations. During offloading operations at Cabrillo Port, LNG carriers would load ballast water while they discharge LNG to the FSRU. In addition, the FSRU would discharge and load ballast water as needed as it receives LNG from the carriers and exports natural gas to shore. All FSRU ballast water would be obtained from, and discharged to, the ocean in the same location adjacent to the FSRU.

With respect to ballast water exchanges, in 2004 the International Maritime Organization (IMO) adopted the International Convention for the Control and Management of Ship's Ballast Water and Sediments (BWM Convention). When ratified by the international maritime community, all vessels will be required to exchange ballast water outside of 200 nm from land in water not less than 200 meters in depth. While regulations of ballast water exchange in the EEZ is beyond the federal government's authority (outside of 12 nm from the coast), the USCG is currently developing a ballast water discharge standard and is also actively working with EPA and other federal agencies to examine alternative techniques and their effects on evasive species. When implemented, the U.S. will recognize the IMO BWM Convention as International Law.

Recommendations pursuant to section 304(d)(2) of the NMSA:

1. The USCG should develop a formal plan in consultation with resource management agencies in the region to address and mitigate impacts (e.g. facility and shipping noise) from all phases of the project. This plan should include designating emergency anchorage areas.

The applicant will be required to direct prospective contractors for the offshore pipeline installation to address noise reduction measures in their respective bid proposals, i.e.: (1) extent to which they will use engines with lower noise ratings, (2) phased construction activities to reduce simultaneous operations of engines, and (3) all other practices they would follow to reduce equipment noise emissions.

Offshore construction would be temporary and the applicant will be required to operate equipment only on an as-needed basis to reduce the number of noise producing effects. The

applicant will also be required to ensure that engine covers and mufflers are in place and in good working condition.

Construction would have maximum noise intensities (depending on the specific vessel used) between 159 – 171 dB. This additional noise factor was taken into account for the entire duration of construction. However, based on the limited duration of the construction activities and the fact that construction equipment will only be used on an as-needed basis, significant acoustic affects are not expected. Noise would be likely to affect, but not adversely effect, marine species.

The following additional measures will reduce the impacts:

- The applicant will be required to not conduct off-shore construction during the grey whale migration seasons.
- The applicant will be required work with marine architects, acoustic experts, mechanical experts, and the USCG to design the FSRU and its equipment to reduce, to the maximum extent practicable, the output of cumulative noise generated at the facility.
- The applicant will be required to prepare an acoustic monitoring plan to obtain site-specific baseline data and empirical data prior to and during LNG operations.
- The applicant will be required to ensure that helicopters will maintain a flight altitude of at least 2,500 ft except during take-off and landing. Note that helicopter flights will only be used in emergency situations (i.e. medical evacuation) and the occasional visitor.

In conclusion, the waters around the CINMS are heavily ensonified. Noise impacts on fish and other marine biota would be temporary and likely to affect, but not likely to adversely affect, during these specific activities and would not exceed significance criteria.

Emergency anchorage areas are not designated. Please see response to comment 1 under Comments on the DEIS/EIR section of this letter.

2. The USCG should expand the Vessel Traffic Services (VTS) to include the deepwater port and vessels in the eastern Santa Barbara Channel region in addition to the proposed mitigation measures.

Expansion of the VTS into the Santa Barbara Channel is not solely a US Coast Guard decision. The VTS is a cooperative effort of the State of California, the US Coast Guard, Marine Exchange of Southern California and the Ports of Los Angeles and Long Beach under the authority of California Government Code §8670.21, Harbors and Navigation Code §445-449.5, and the port tariffs of Los Angeles and Long Beach. Expansion of the VTS to include the proposed deepwater port and vessels would require changes to both Federal regulation and California code. However, if the carriers were diverted such that they came under the jurisdiction of the VTS, they would be subject to reporting via radio to VTS LA/LB and would need to follow routing and speed orders.

3. The USCG should ensure that the plan to minimize impacts on seabirds includes light shielding, minimum wattages, avoidance of roosting and nesting areas, and amended operations during sensitive breeding and feeding seasons.

During operation, lights would be in use during evening and night hours on the FSRU and supply vessels. As required for safety, the brightest light onboard the FSRU would be a rotating beacon at the highest, unobstructed point on the vessel; this light would flash once every 20 seconds and be visible all around the horizon. This light would be required to have an intensity of 15,000 candelas.

The applicant will be required to develop a construction/operation lighting plan in consultation with a marine bird expert and submitted at least 60 days before commencement of construction and operations. The plan would include at least the following restrictions:

- Limit lighting used during construction and operation activities only to perform such activities;
- Extinguish all lights for that activity, once that activity is completed;
- Shield lights so that the beam falls only on the workspace and so that no light beams are directly visible more than 3,281 ft (1000 m) distant;
- Limit lights shining directly into the water to the area immediately around the vessels, except that searchlights may be used when essential to navigation, personnel safety, or for other safety reasons.

At its closest point, the proposed location for the FSRU would be 12.65 nm (14.56 miles) from the CINMS boundary. The closest distance from the CINMS boundary to the pipeline is 7.2 NM (8.29 miles). This is outside the 6 nm boundary of the CINMS. No vessels associated with the project operations would enter the CINMS. According to CINMS staff, installation of the FSRU and pipelines at the proposed location is not inconsistent with the Sanctuary (Mobley, August 2004).

The feeding grounds of seabirds generally range over very large areas; therefore no measurable impacts on feeding areas or prey are expected.

No cumulative impacts to shorebirds are expected from the proposed project when considered together with the known effects of other projects in the area. Nesting and breeding take place on land; therefore no impacts on reproductive habitat would occur.

The applicant will be required to engage a qualified wildlife biologist to conduct pre-construction surveys in advance of any vegetation clearing, or excavation, or any other activity that causes a disturbance to surface soils. The biologist will be familiar with local birds, reptiles, mammals, amphibians with survey requirements including any relevant agency protocols, and survey seasons.

Habitat areas associated with Ormond Beach would be avoided by using Horizontal Directional Boring (HDB) to install the pipeline along the beach, and all construction activities would be

Subj: Cabrillo Port Deepwater Port, NOAA/National Marine
Sanctuaries Act Response

16113
August 31, 2006

confined to the Reliant Energy Ormond Beach Generating Station. Because HDB will be used across the area designated critical habitat, no cutting, clearing, and/or removal of vegetation would be necessary. In addition, the applicant will be required to avoid disturbing nesting birds such as the western snowy plover by constructing outside the nesting season.

4. The USCG should develop a comprehensive and coordinated proactive strategy to prevent the spread of marine invasive species. Appropriate management strategies to prevent and control the introduction of marine invasives from the operation of the LNG terminal and LNG carriers need to be detailed. The plan should be reviewed and approved by the CINMS manager prior to facility construction.

Please see our response to comment 5 under Comments on the DEIS/EIR section of this letter for information on ballast water from LNGCs. Since the FSRU will discharge and intake ballast water from its mooring location, there will be no introduction of marine invasive species.

If you have any questions, please contact me or Mr. Ray Martin at (202) 372-1449.

Sincerely,



M.A. PRESCOTT
Chief, Deepwater Ports Standards Division
U. S. Coast Guard
By direction

Enclosure: Figure 4.3.3 Proposed Routes for Support Vessels between Cabrillo Port and Port Hueneme

Copy: H. K. Lesnick, MARAD
A. Zimpfer, EPA
D. Noda, USFWS, Ventura Field Office
A. Szijj, USACOE, Ventura Field Office



16113
December 21, 2006

Mr. Rodney McInnis
Regional Administrator
U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Region
501 West Ocean Blvd, Suite 4200
Long Beach, California 90802-4213

Dear Mr. McInnis:

Thank you for your letter of July 14, 2006, concerning the proposed Cabrillo Port Deepwater Port and our determination under Section 7 of the Endangered Species Act (ESA) (16 U.S.C § 1536(a)(2)) on the effects of the construction and operation of the proposed Cabrillo Port Deepwater Port on listed species. This letter is in reply to the comments and recommendations of your letter. We will highlight the analysis of the Cabrillo Port Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) that we feel is responsive to your letter as well as your previous correspondence on Cabrillo Port. Prior to publication of the Final EIS/EIR, your agency will have an opportunity to review it and if concerns still exist please advise us. We are confident we can adequately address your agency's concerns within the document. Additionally, if needed, following consultation with your agency we will recommend conditions on the deepwater port license, if granted, that adequately address your concerns.

Endangered Species Act (ESA) Comments:

We carefully reviewed your comments on completeness on the Cabrillo Port, LLC application as identified in your letter dated October 7, 2003. We determined that the information you requested could be developed during the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) process. The applicant was required to provide the information you requested to our environmental contractor. The environmental report submitted by Cabrillo Port is only a starting point for the EIS/EIR; it is by no means the sole source for the development of the NEPA/CEQA document. Most of the completeness deficiencies you identified are addressed in the Draft EIS/Draft EIR. Regarding the potential impacts from decommissioning that may occur some 40 years in the future, given the speculative nature of actions and available technology that far in the future, we feel that the best method to resolve your concerns is to recommend a licensing condition for any license granted that will ban the use of explosives and will provide for NMFS review and concurrence in advance of any decommissioning that is undertaken. This should resolve your concerns with respect to decommissioning impacts.

As you are aware, the EIS/EIR relied heavily on the species list titled "*List of species that may occur in the vicinity of the Cabrillo Port Liquid Natural Gas project in Ventura County, CA*" that was provided as an enclosure to your June 22, 2004 letter to Entrix, Inc.. We have carefully reviewed the updated species list titled "*ESA-listed species under the jurisdiction of NOAA's National Marine Fisheries Service that may occur off the coasts of Washington, Oregon and California (As of June 2006)*" that was provided with your letter of July 14, 2006. We note the change in geographic boundaries based on your contention that the action area should be expanded.

The identification of the region of influence (ROI) is the responsibility of the lead agency. For the purposes of the proposed project, the ROI for the impact assessment on marine biological resources is, at its outermost boundary, the Southern California Bight (SCB). For some specific analyses, such as impacts on ichthyoplankton and benthic resources, the ROI is a subset of the SCB, as defined in those analyses. The SCB is an established ecological entity; its unique physical characteristics and diverse marine life has been the subject of numerous academic studies. It is appropriate to set the boundaries of the SCB as the ROI for this impact assessment because a) the proposed project and surrounding marine environments are situated within the SCB; and b) impacts from construction, operation and decommissioning are not expected to reach beyond the SCB, and in most cases would not extend beyond a short distance from proposed project components. Most of the expected impacts would be on a small number of individuals of a species rather than on populations themselves, and many of the impacts would be indirect. For instance, even though some marine mammals have breeding grounds outside of the SCB, it is unlikely that the loss of an individual marine mammal from within the SCB, although a significant impact itself, would affect the population's overall reproductive success. In addition, the impact from seawater intake would occur at a single point within the SCB, and would therefore be unlikely to have effects reaching outside the study area defined in that impact analyses, much less outside the SCB. Proposed LNG carrier routes within the SCB are shown in figure 4.3-2 (attached).

Beyond the SCB, LNG carriers would generally be expected to travel either west (toward the EEZ and then Australia, Malaysia, or Indonesia) or east (toward the FSRU from the EEZ and into the SCB). There would be no reason for LNG carriers to travel either north or south of the SCB within federal waters. All other vessel traffic associated with the proposed project would occur within the SCB. Based on these considerations, we do not agree that the region of influence should be expanded and we feel that using the species list enclosed with your June 22, 2004 is appropriate. We are however, providing additional information regarding the potential impacts from the LNG vessels related to vessel strikes and vessel transit noise to assist you with your determination. Additionally, we will recommend that any license that is granted will include a condition that all LNG carriers that visit the FSRU transit in specific East-West transit lanes where vessel are already concentrated to reduce or eliminate any new or additional vessel strike risks or noise sources outside these already heavily traveled areas. With this precaution and the additional information provided below, we believe that we have addressed your requests and concerns and request that you provide concurrence with our finding that this project will not likely affect the continued existence of any threatened or endangered species or lead to the destruction of critical habitat.

A. Fish

As stated in our June 5, 2006 letter we declared that for the purposes of analysis, we assumed a 100% mortality rate for EFH species managed by the Pacific Fishery Management Council. We respectfully disagree with your statement that since a description of the proposed vessel routes were not provided, all ESA-listed fish species off the West Coast are applicable. The LNG routes were identified in figure 4.3-2 in both the draft EIS/EIR and the Revised Draft EIR. Therefore, we remain committed to the region of influence as defined as the SCB and will continue to use the species list attached to your letter of June 22, 2004.

In the Draft EIS and the Revised Draft EIR, the SCB is described as an area approximately 30,100 square miles (78,000 square kilometers [km^2]) between Point Conception on the north, extending south to Ensenada, Baja California, encompassing the Mexican Islands of Todos Santos and Los Coronados, and including the eight Channel Islands to the west. The offshore components of Cabrillo Port would be located in the Santa Monica Basin, within the SCB. The Santa Monica Basin, in conjunction with the San Pedro Basin (referred to as the Santa Monica-San Pedro Basin Complex) is approximately 4000 km^2 .

B. Invertebrates

We also respectfully disagree with your assertion that we did not provide evidence to support our determination of no effect on white abalone. Both the Draft EIS/EIR and the Revised Draft EIR state that no hard substrate exists within the proposed project area (mooring locations and pipeline route). This information and conclusion are based on the 2004 Fugro Pelapos survey and report, also cited in both documents. While we do not dispute California Department of Fish and Game (CDFG) 1955-1993 white abalone landing information (0.29 percent), we can not find evidence that this small percentage of landings resulted in harvesting from the proposed project area. And while two white abalone were identified in 2001 in the shallow water off the Santa Barbara coast, this most likely represents an anomaly.

C. Sea Turtles

You are correct that we inadvertently omitted in our June 5, 2006 letter information on sea turtles. Potential impacts to specific species (identified below) were identified in the Draft EIS/EIR and in the Revised Draft EIR, impacts to specific species are identified below. Sea turtles have not been reported at or near the proposed project location despite a comprehensive study conducted by Stinson (1984) and numerous marine mammal surveys conducted between 1975 and 1993 (Bonnell et al 1981; Dohl et al 1981; Hill and Barlow 1992; Caretta and Forney 1993; Mangels and Gerrodette 1994; Caretta et al 2000 and 2001; Barlow and Taylor 2001).

Green turtle (*Chelonia mydas*): This species frequents tropical to temperate waters and appears as a rare transient in the Southern California Bight, usually during the warm-water months of summer and early fall and during El Niño events. A notable exception is

an anomalous population of 50-60 green sea turtles in San Diego Bay, attracted to the warm water discharge of the San Diego Gas and Electric Company power plant.

Leatherback turtle (*Demochelys coriacea*): The leatherback ranges from Chile to Alaska; therefore the proposed project is within its normal range and foraging habitat. This species usually appears from July to September. Nonetheless, leatherbacks were only sighted on four occasions during the extensive marine mammal surveys (referenced above) conducted between 1975 and 1993.

Loggerhead turtle (*Caretta caretta*): Loggerheads favor temperate to tropical waters and are often reported off Baja California. Juvenile loggerheads have been reported occasionally in deep water off the Southern California Bight and are most often seen during the warm-water months of July through September and during El Nino events. The sightings of juveniles most likely represent the northern extremity of the range of the larger population of juveniles found off Baja California (Pittman 1990). .

Olive ridley turtle (*Lepidochelys olivacea*): The range of the olive ridley turtle is in warm to temperate waters from Baja California to Peru. Stinson (1984) considered this species rare in the Southern California Bight, and none were sighted during the extensive marine mammal surveys (referenced above) conducted between 1975 and 1993.

As stated in the Draft EIS/EIR and the Revised Draft EIR, we acknowledge that turtles (and marine mammals) may be entangled in construction or operation equipment, resulting in injury or mortality. All construction support vessels will carry a qualified marine mammal monitor with a 360° view to watch and alert vessel crews of the presence of marine mammals and sea turtles. Please see attached AM (Applicant Measure) BioMar (Biological Marine)-9b "Marine Mammal Monitoring" for more specific information. The applicant will also ensure that vessel operators will deploy any material with the potential of entangling turtles (and marine mammals) only as long as necessary to complete the task. Please see attached MM BioMar-10a. "Deployment of Potentially Entangling Material" for more specific information on this topic. Therefore, based on the species information above and the mitigation measures, both the construction and the operation of the proposed project are likely to affect, but not likely to adversely affect these species.

D. Marine Mammals

For the reasons stated, we remain committed to the region of influence as defined by the Southern California Bight, not the entire west coast of the United States or the "entire route" "world-wide" as requested in your letter. We will continue to use the species list attached to your letter of June, 22, 2004 which was used as a basis for the assessments in the Draft EIS/EIR and the Revised Draft EIR. We again respectfully disagree that the information provided in the Revised Draft EIR and our letter of June 5, 2006 does not provide sufficient information for your determination.

E. Specific Comments

Vessel Traffic:

We have acknowledged in the Draft EIS/EIR and the Revised Draft EIR the possibility of impacts to whales and turtles from strikes and avoidance behavior. However, the degree of significance from these potential impacts is a function of the number of mammals and turtles that may be expected to be in the area at the time of vessel transit or vessel crossing critical habitat. There is no designated or proposed critical habitat for species covered under the Marine Mammal Protection Act (MMPA) or assigned to any threatened or endangered species within the defined ROI. As noted in Draft EIS/EIR and Revised Draft EIR figure 4.3-2, the LNG carrier routes are further from shore than the FSRU and therefore farther away from the Southern California Bight where migratory whales, transitory turtles and essential fish habitat may be present. Prior to entering the U.S. Navy Operating Areas), the LNG carriers will be under the control of the ship's master, who will determine the best and safest route for his vessel across the Pacific Ocean; that is, they are not required to follow specific routes. As discussed earlier, we will recommend that any license that is granted include a condition that all LNG carriers transit in the specific East-West transit lanes within the EEZ but potential whale or turtle strikes or potential incidences of avoidance behavior can not be reasonably forecast.

As noted in the Draft EIS/EIR, Revised Draft EIR and our letter of June 5, 2006 most of the species covered under ESA and/or MMPA are either highly transitory (i.e. grey whales), are not likely to be present, or most sightings in the proposed project area are at the limit of their range (i.e.: olive ridley and loggerhead turtles). However, the applicant will not engage in construction activities (i.e.: pipelaying and mooring of the FSRU) during the grey whale migrations. Please see attached AM BioMar-9a. In addition, marine mammal monitoring during both construction and operations, will further minimize the possibility of strikes. All construction support vessels will carry a qualified marine mammal monitor with a 360° view to watch and alert vessel crews of the presence of marine mammals and sea turtles. Please see attached AM BioMar-9b for more specific information regarding marine mammal and sea turtle monitoring.

Noise:

We have acknowledged in the Draft EIS/EIR and the Revised Draft EIR the possibility of noise impacts on marine species from construction and operation of the proposed project. These impacts may result in both Level A and Level B takes under the MMPA during construction and operation. Please see specific discussions below.

Construction of pipeline and installation of FSRU, mooring and riser systems:

For proposed offshore pipeline construction, the zone of audibility is based upon the range at which Project sounds could be detected above the quietest background noise levels; in this case, above approximately 90 dB re 1 μ Pa-rms. During pipeline construction, this would include a radius of up to approximately 5.4 NM (6.2 mi or 10 km) for construction activities. This would correspond to an area of 314 km². The actual zone of audibility could be much closer in to

construction activities during rough sea conditions, toward the coast and with vessel traffic in the shipping lane.

To assess noise impacts from construction, the zone of responsiveness, in which avoidance behaviors could possibly occur with some species, is projected based on estimated sound pressure levels of 120 dB re 1 μ Pa-rms. This zone would include a radius of up to approximately 0.5 NM (0.6 mi or 1 km) from construction activities. This would correspond to an area of up to approximately 3.1 km² centered around pipeline construction activities. At this range, Level B takes under the MMPA could possibly occur.

Although the zone of physical damage may differ substantially among marine mammal species, for this project, the estimate is based on a continuous level of 180 dB re 1 μ Pa-rms. This zone would include a radius of up to approximately 3.3 ft (1m) from pipeline construction activities. This would correspond to an area of up to 3.1 m². At these ranges, Level A takes under the MMPA could possibly occur.

Recent studies of dead stranded cetaceans suggest that extensive exposure to mid-frequency sonar impulses used in Navy fleet exercises have induced this phenomenon in deep-diving cetaceans. However, it is very unlikely that loud impulse sounds of this type would be generated by the proposed Project. Noise levels beyond the 190 dB re 1 μ Pa-rms level would not occur during pipeline construction activities.

The applicant will be required to comply with MM NOI-1a: "Efficient Equipment Usage" (see attached) which requires construction equipment to be operated on an as-needed basis, ensure that equipment engine covers and mufflers are in good working order and prospective off-shore construction contractors address noise reduction measures to the extent of using engines with lower noise ratings, phase construction to lessen the number of equipment operating simultaneously, and to identify other practices to reduce equipment noise.

Operations: Support Vessels, LNG carriers, and helicopters

Noise produced by the LNG carriers would likely be loudest at cruising speeds and reduced in volume when moored and discharging LNG. During the transfer process, the LNG tanker would be moored to the FSRU and would only generate minimum noise; the carriers would not be using propulsion systems when docked. The main noise associated with the LNG carrier docking would be associated with tugs and the FSRU thrusters. The total noise level for this combination would be 192 dB re 1 μ Pa-rms broad-band. With a limit of 99 LNGCs per year, this occurrence would be expected to occur approximately 198 times. Similarly, crew and supply vessels would be loudest when underway, but such sounds would be transitory and short-lived. Supply vessels would generate a maximum of 181 dB re 1 μ Pa-rms, reducing to 174 dB re 1 μ Pa-rms at 1 m from the source. Tugs and crew/supply boats would be expected to transit between Port Hueneme and the FSRU 2-3 times per week, depending on whether an LNGC is off-loading at the FSRU. Helicopters are loudest and during approach and take-off, when they must use maximum power and when they are closest to water. At their minimum flying altitude, they would generate noise at 162 dB re 1 μ Pa-rms within 1 m of the helicopter. This noise level would continue only briefly while near the helipad on the FSRU, which in itself would help to

attenuate the sound. It should be noted that helicopters will not be a routine part of operations, but only used as appropriate in the rare case of an emergency to evacuate an ill crew member or for occasional visitors.

The applicant will also be required to comply with MM BioMar-5c: "Helicopter Altitude" (see attached) which mandates that helicopters will maintain a flight altitude of at least 2,500 ft (762 m) except during take-off and landing on the FSRU.

Reactions exhibited by marine mammals and sea turtles to underwater noise from vessels and platforms vary widely. In general, pinnipeds and small cetaceans seem little affected by transitory or continuous noise and may become habituated to it. For example, California sea lions regularly haul out on mooring buoys and lower decks of oil platforms, and several species of dolphins regularly bow-ride vessels moving through the water. Baleen whales generally ignore stationary or distant sounds. If a vessel approaches slowly, with no aggressive moves, whales may shy away from such vessels in subtle ways (Howorth, 1962-2004).

Operations: Pipeline

Operation of the pipeline from the FSRU to shore may generate noise caused by the friction from the natural gas flowing through the risers, pipeline, and through various valves and fittings. A study was developed to estimate the underwater-radiated noise from the pipeline using 10 different flow cases. The analysis found that the total level of underwater radiated noise under normal operating conditions (800 MMscfd) was 96 dB, which is higher than background noise on a calm day. The potential noise generated from the pipeline when the FSRU is operating at maximum capacity (1,200 MM scfd) was 106 dB, 16 dB above background on a calm day and less than background on a windy day (WorleyParsons 2005b).

Operations: FSRU

The FSRU would generate less noise when it is stationary than when the thrusters are in use, as when the tugs are nudging the LNG carrier into position. Noise levels and distances from the FSRU of take thresholds for marine mammals were estimated for 7 operating scenarios (see Table 4.7-13). Level A take limits of 180 dB re 1 μ Pa-rms and Level B take limits of 120 dB re 1 μ Pa-rms were used. Level B impulse (120 dB re 1 μ Pa-rms) was not used, as the noise generated by the FSRU would be continuous, rather than impulsive in nature. The estimates were made using engine manufactures' noise specifications and factoring in the structural elements of the FSRU design (CJ Engineering 2006).

To assess noise impacts from operations, the zone of audibility is based upon the range at which Project sounds could be detected above the quietest background noise levels; in this case above approximately 90 dB re 1 μ Pa-rms (Entrix, 2004; CJ Engineering 2006). During normal operations, (cases 1-4 in Table 4.7-13) this would include a radius of up to approximately 2.2 NM (2.5 mi or 4 km) from the FSRU and up to 7.6 NM (8.7 mi or 14 km) from the FSRU for less likely or uncommon operational scenarios (cases 5-7 in Table 4.7-13). This would correspond to an area of 50.2 km² for normal operations and about 614.4 km² for less common and unlikely operational scenarios. This is a maximum projection. The actual zone of audibility could be much closer to the FSRU during rough sea conditions and with vessel traffic in the